REMARKS

The application has been amended and is believed to be in condition for allowance.

Claims 1-18 and 20 remain in this application.

Some of the claims have been amended. Claim 21 is new.

Considering claims 12-13 and comparing claims 7-8, claim 7 relates to the lowest value of the contact angle for both pulleys (and states that these angles λp-min and λs-min are essentially equal; see also figure 12, minimum angle is approx. 7 degrees); claim 8 relates to the highest value for these angles (and states that the angle λp-max is larger than the angle λs-max; see also figure 12, maximum primary pulley angle is approx. 10 degrees and maximum secondary pulley angle is approx, 9 degrees). Claim 21 finds support in these previous claims.

No new matter is entered by the amendments.

BRANDSMA Rule 132 Declaration

The last two amendments made reference to the declaration by Mr. Brandsma (previously filed). This Official Action stated that no declaration is found in the application (bottom page 8).

However, a declaration by Mr. Brandsma in compliance with 37 CFR 1.132 was previously filed as part of the Amendment filed November 25, 2008. The undersigned attorney has verified that this declaration is present in PAIR as the final seven pages

of the file titled “2008-11-25 Applicant Arguments/Remarks Made in an Amendment”.

It is very distressing that this declaration has not been considered, especially having been filed in November 2008.

Claim Objections

Claim 1 was objected to, the Official Action stating that “substantially the” in line 16 should be changed to read -- the substantially --.

This amendment was made.

Claim Rejections - 35 USC § 112

I. The Official Action cited the first paragraph of 35 U.S.C. 112: The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The Official Action rejected claims 14-18 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The Official Action stated that the claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art

to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Specifically, the Official Action stated that there was no support for the claimed change in the coefficient of friction of the pulley in relation to a radial position.

Applicant respectfully disagrees.

See published application paragraphs [0001-0003] "The present invention relates to a continuously variable transmission … It should be noted that the minimum clamping force required for each pulley to transmit a torque which is supplied can be approximated by the following equation: Kp = … . In this equation, Kp is … Tp which is supplied to this primary pulley to be transmitted, i.e. virtually without any slip between the drive belt and the respective pulley disc in the tangential or circumferential direction, with a tangent line on the pulley disc at the location of an effective contact point between this pulley disc and the drive belt forming a contact angle (λ) with the radial direction, the said point of contact being located at a radial distance Rp from a centre of rotation of the pulley, which distance corresponds to the said primary running radius, with an effective coefficient of friction [] between the drive belt and the pulley disc prevailing in this tangential direction. The minimum secondary clamping force Ks required can be calculated in a corresponding way …."

See also paragraphs [0025], [0061], [0064], [0071], ….

See that in claim 16 there is an explicit recitation of the pulley disks being provided with at least one of a relatively large radius of curvature (R40) and a relatively low surface roughness, at least as compared to the radius of curvature (R40) and the surface roughness at a location of a radially innermost position of the contact point. See paragraph [0046] and Figure 5.

Accordingly, the claims contains subject matter which is described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Withdrawal of this rejection is solicited.

II. Claims 14-18 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 14, 15, and 16 were noted to recite the limitation "the location" in lines 22, 5, and 9. The Official Action stated that there was insufficient antecedent basis for these limitations in the claims.

The claims have been amended to remedy the stated basis of rejection.

For claim 17, the Official Action stated that the claim language "substantially corresponds to the contour shown" renders

the claim indefinite because it is unclear what limitations are included or excluded in the figure.

The term "substantially" has been removed and the claim amended to improve the grammar.

The claim is definite in that it requires that for both the primary pulley (λp) and the secondary pulley (λs) the respective contact angle (λ) in relation to the transmission ratio (Rs/Rp) of the transmission (1) corresponds to the contour shown for this parameter as shown below:

Therefore, claim 17 has been amended to remedy the stated basis of rejection.

Withdrawal of the indefiniteness rejections is solicited.

Rejections Under 35 USC 103

Claims 1-7, 9-13, and 20 stand rejected as obvious over Durum 5,328,412 in view of Brandsma et al. 2003/0144097.

Claims 14, and 16-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Durum (5,328,412) in view of Yukiyoshi (JP 61-048656).

Claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over Durum (5,328,412) in view of Yukiyoshi (JP 61-048656) as applied to claim 14, and further in view of Tatara et al. (4,898,567).

Applicant traverses these rejections.

Claims 1-7, 9-13, and 20

On Official Action page 4, second paragraph, the Examiner states that Brandsma et al. teach changing the clamping force of one of the pulleys (2, 3) to depart from a clamping force equilibrium to change the running radius of the belt around the pulleys and the CVT ratio. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have controlled the CVT of Durum by changing the clamping force ratio between the primary and secondary pulleys, as taught by Brandsma et al., to efficiently and effectively control the CVT ratio between the primary and secondary pulleys.

The control offered by the Examiner is relevant to transient operation and not steady-state/equilibrium transmission operation.

Attention is directed to published application paragraph [0005] which addresses this issue and discloses: "In practice, a ratio between the primary and secondary clamping forces, …. The clamping force ratio required for an equilibrium state of the transmission, i.e. a constant transmission ratio, is referred to below as the equilibrium clamping force ratio, denoted here as the KpKs ratio. … The relationship between the transmission ratios of the transmission and the associated equilibrium clamping force ratio for a constant transmission ratio is referred to below as the KpKs curve for short. In a non-

equilibrium state of the transmission, in which the transmission ratio is decreasing or increasing, the clamping force ratio required is raised or lowered, respectively, with respect to the said equilibrium clamping force ratio, the extent to which a clamping force ratio which is actually effected, referred to here as the FpFs ratio, deviates from the equilibrium clamping force ratio being the crucial factor in determining the speed at which the transmission ratio changes."

Thus, in this regard, the invention specifically concerns the steady state condition, as is explicitly recited in claim 1 in that the claim recites that the transmission speed ratio Rs/Rp is maintained constant by the application of a certain, constant clamping force ratio. This constant clamping force ratio for maintaining a constant transmission speed ratio is dictated by the physical design of the CVT, i.e., can not be freely controlled during operation as appears to be erroneously understood by the Examiner. That is to say, each clamping force ratio (in a range of clamping force ratios) is linked to a specific transmission speed ratio (in a range of transmission speed ratios).

The relationship between these two parameters depends on the specific physical design of the CVT. See, for example, the graphs of figures 8, 9 and 12.

So, although it is true that "the clamping forces may be controlled to any appropriate ratio", it depends entirely on

the CVT design employed what (steady state) speed ratio is realized thereby. For example, in the conventional CVT design with pulleys provided with an 11-degree cone angle (figure 8), the constant clamping force ratio for maintaining the constant transmission speed ratio Low is approx. 0.7.

From this value at a “Low” transmission ratio, the "equilibrium" clamping force ratio (i.e. the constant clamping force ratio for maintaining a constant transmission speed ratio) gradually increases in relation to the transmission speed ratio to approx. 1.5 at which clamping force ratio the CVT is in speed ratio Overdrive.

It is thus not a matter of control of the clamping forces to any desired level/ratio but of CVT design to realize that clamping forces of desired level/ratio affect the desired (steady state) speed ratio.

See published application paragraph [0011] “For the transmission which is predominantly used in practice with a contact angle of approximately 11 degrees, the equilibrium clamping force ratio, when using a safety factor of approximately 1.3, which is generally the minimum value used, and depending on the transmission ratio, has been found typically to vary between approximately 0.9 in Low and 1.8 in Overdrive.”

Thus, as is relevant to claim 1, in the conventional CVT when the transmission speed ratio (Rs/Rp) is both at the largest ratio (“Low”) and is at equilibrium, the clamping force

ratio is less than 1, typically 0.7-0.9.

There is no prior art offered by the Examiner, or any teaching for a clamping force ratio KpKs, at the largest transmission ratio (low) with the ratio at equilibrium (constant transmission ratio), of 1 or more.

Thus, the invention clearly departs from this conventional ratio transmission ratio, using pulley contact angles to realize that the clamping force ratio is larger than in the prior art, i.e., at least 1 in Low (Claim 1).

More specifically, according to the invention (and to realize the subject matter of Claims 1-4), the pulley contact angles are defined in accordance with Claims 7, 8, 10, 11, 12 and 13). Also see new claim 21.

The prior remarks concerning the BRANDSMA Declaration remain relevant.

In the paragraph spanning pages 2-3 of the declaration, the Mr. Brandsma declared that (emphasis added), “In my experience, the CVT configurations disclosed in BRANDSMA, e.g., Figures 4A, 4B, 5A, 5B, 6A, and 6B, at least as applied in and during operation of a practical CVT design, the clamping force ratio (KpKs) varies between **less than 1 in the largest transmission ratio ‘Low’** up to more than 1.8 in the smallest transmission ratio ‘Overdrive’”. Also see Figure 8 of the present application relating to the known, prior-art transmissions (see specification page 11, lines 8-11).

Thus, the declaration is clear that in the largest transmission ratio "Low", the BRANDSMA CVT's have a clamping force ratio (KpKs) that is **less than 1**.

Specific to claim 1, Mr. Brandsma's declaration (page 3, first full paragraph) states (emphasis added) that "The configurations disclosed in BRANDSMA, e.g., Figures 4A, 4B, 5A, 5B, 6A, and 6B **do not provide** a contact angle (λ) that is adapted in relation to a radial position (Rp, Rs) where, in the largest transmission ratio 'Low', the clamping force ratio (KpKs) has a value in the range between 1 and the clamping force ratio (KpKs) in the smallest transmission ratio 'Overdrive'".

The Official Action cites to BRANDSMA paragraph [0002]:

> [0002] The CVT of the present type is generally known, for example from EP-A-0.950.837, and comprises a first adjustable pulley, a second adjustable pulley and an endless flexible belt, such as a push-type drive belt known from EP-A-0.962.679, a chain and the like, for transmitting torque between the pulleys at a variable transmission ratio. In the known CVT, with the application of a clamping force, the flexible belt is clamped at a continuously variable radial position between the sheaves of a pulley. To this end, at least one sheave of a pulley is axially movable. The lateral side faces of the flexible belt, which are intended for interaction with the sheave faces of a pulley, are mutually oriented at a belt angle, such that the flexible belt tapers radially inward. The sheaves faces of a pulley, which are intended for interaction with the lateral side faces of the flexible belt, are mutually

> oriented at a pulley angle, such that together the sheave faces of a pulley define a V-shaped groove. The clamping force applied for each pulley may be such that a state of equilibrium arises, wherein a transmission ratio of the CVT that is defined as the ratio of radial positions of the interaction between the lateral side faces and the sheave faces is constant. Departing from such a state of equilibrium, the transmission ratio may be continuously variably changed by increasing respectively decreasing the clamping force for each pulley, whereby the radial position of the interaction between the lateral side faces and the sheave faces may be changed for each pulley.

It appears that the Examiner has misunderstood the teaching of BRANDSMA by considering that "the state of equilibrium" mentioned in paragraph [0002] would relate to the clamping force ratio (the Official Action seeming to invent the term "a clamping force equilibrium").

Paragraph [0002] is consistent with the paragraph spanning pages 2-3 of the declaration, where Mr. Brandsma declared that BRANDSMA discloses CVTs that during operation, the clamping force ratio (KpKs) varies between **less than 1 in the largest transmission ratio "Low"** up to more than 1.8 in the smallest transmission ratio "Overdrive". Note that paragraph [0002] pertains to moving from one transmission ratio to another transmission ratio and does not address the contact angle provide a clamping force ratio at a particular equilibrium state, i.e., as recited in the claims.

The claims have previously been amended to make this more clear, i.e., the contact angle (λ) being adapted in relation to said radial position (Rp, Rs) provides that at least in the largest transmission ratio (Rs/Rp) and at least when the largest transmission ratio (Rs/Rp) is constant, … .

The Examiner states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have controlled the CVT of Durum to any appropriate clamping ratio, including a ratio between 1 and 1.8, between the primary and secondary pulleys, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, citing to In re Aller, 105 USPQ 233.

But as discussed above, the claimed range of at least 1, is outside the range that those skilled in the art have previously used (e.g., 0.7, 0.9). The recited range is outside the range that those skilled in the art previously used and is not an optimization of a previously known range.

The rejection provides no motivation why one of skill would move to a range different from the range previously used for the purpose. Without some motivation, the exploration of a new range, as urged by the Examiner, is not obvious.

As to claims 2, 3 and 10, the Official Action states that “the [DURUM] CVT as modified [by BRANDSMA], appears to meet the limitations of the claim in that the clamping force in the

primary and second pulley change depending on the running radius of the belt, and that the clamping force becomes smaller as the running radius of the drive belt increases."

Notwithstanding the statements made in the Official Action, BRANDSMA does not disclose that it was known to adapt the contact angle in relation to a radial position to provide the recited clamping force ratio.

As to the recited numeric values, the Official Action has acknowledged that BRANDSMA fails to disclose the specific clamping forces of the pulleys. As such, there is clearly no teaching to obtain the recited values.

As to claims 12-13, the Official Action makes a general assertion that DURUM appears to meet the limitations, pointing to the VCT illustrated by Figure 1. However, there is no support provided, and applicant can find no support, for the features actually recited by these claims.

In view of the above, each claim is believed patentable.

Claims 14-18

Claims 14, and 16-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Durum (5,328,412) in view of Yukiyoshi (JP 61-048656), and claim 15 was rejected in further in view of Tatara et al. (4,898,567).

Durum only discloses a conventional CVT.

Yukiyoshi is a Japanese reference. There is no

disclosure of the recited subject matter identified by the Official Action.

The statement that Yukiyoshi teaches including deposits on pulley sheaves such that the frictional coefficient of the pulley is increased as a diameter of the pulley is decreased.

Putting aside the question of whether this is an accurate statement of the Yukiyoshi disclosure, the Official Action not related this disclosure to the claim 14 and claim 16 recitations.

Claim 14 recites wherein, at least when the transmission (1) is operating, a coefficient of friction between the primary pulley (2) and the drive belt (10) in relation to a radial position (Rp) of a contact point therebetween has a lowest value at a location of a radially outermost position of said contact point.

The offered teaching of Yukiyoshi does not disclose the claimed feature. Nor has the rejection offered Yukiyoshi for the claimed feature.

Similarly, claim 16 additionally requires wherein, at least as seen in a tangential cross section, the primary pulley disks, at the location of said radially outermost position of the contact point between the primary pulley and the drive belt, are provided with at least one of a relatively large radius of curvature (R40) and a relatively low surface roughness, at least as compared to the radius of curvature (R40) and the surface

roughness at a location of a radially innermost position of the contact point.

The offered teaching of Yukiyoshi does not disclose the claimed feature. Nor has the rejection offered Yukiyoshi for the claimed feature.

As to claims 17-18, the Official Action states that Durum, as modified by Yukiyoshi, would appear to satisfy the recited features of the present invention.

This rejection is not viable as the Official Action has made no statement of fact to support the assertion. Further, as to claim 17, it would not be sufficient that the contact angles of the pulleys change with respect to transmission ratio, as the claim is more specific than this.

Claim 15 was rejected in further in view of Tatara (4,898,567).

The Official Action states that Tatara teaches a driving pulley (secondary pulley) having a higher coefficient of friction at a radially outer portion than a driven pulley (primary pulley).

Tatara teaches providing driving and driven pulleys, each pulley having a plurality of raised and recessed contact portions.

Applicant does not see that Tatara makes any teaching as to relative coefficients of friction between the primary and second pulleys. Further, applicant does not see that Tatara

makes any teaches as to the relative coefficients of friction at the recited radially outermost position of a contact point between the pulleys and the drive belt.

This rejection is without support and should be withdrawn. If the rejection is not withdrawn, applicant requests a clear statement of fact as to how the column 2, lines 31-46 passage is construed to disclose the recited feature of the coefficient of friction between the primary pulley and the drive belt is lower than a coefficient of friction between the secondary pulley and the drive belt at a location of a radially outermost position of a contact point therebetween.

Further, reliance on Yukiyoshi is improper.

Yukiyoshi is a Japanese and the rejection relies on passage of the Japanese text. No translation of the text is provided. Making a rejection without providing an English-language translation is contrary to Office practice and requirements.

MPEP 706.02 II concerns reliance upon abstracts and foreign language documents in support of a rejection, and states:

"Prior art uncovered in searching the claimed subject matter of a patent application often includes English language abstracts of underlying documents, …. If the document is in a language other than English and the examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the examiner is relying upon

in support of the rejection. The record must also be clear as to whether the examiner is relying upon the abstract or the full text document to support a rejection. The rationale for this is several-fold. It is not uncommon for a full text document to reveal that the document fully anticipates an invention that the abstract renders obvious at best. The converse may also be true, that the full text document will include teachings away from the invention that will preclude an obviousness rejection under 35 U.S.C. 103, when the abstract alone appears to support the rejection. An abstract can have a different effective publication date than the full text document. Because all patentability determinations are fact dependent, obtaining and considering full text documents at the earliest practicable time in the examination process will yield the fullest available set of facts upon which to determine patentability, thereby improving quality and reducing pendency. When both the abstract and the underlying document qualify as prior art, the underlying document should normally be used to support a rejection. In limited circumstances, it may be appropriate for the examiner to make a rejection in a non-final Office action based in whole or in part on the abstract only without relying on the full text document. In such circumstances, the full text document and a translation (if not in English) may be supplied in the next Office action. Whether the next Office action may be made final is governed by MPEP § 706.07(a)."

Withdrawal of the rejection is therefore solicited. Should the rejection not be withdrawn, an English-language translation is requested and a non-final Official Action be issued. Since this Official Action is not in compliance with office requirements, making the next action Final would also not be in compliance with office requirements.

Any claim not discussed is believed patentable at least for depending from an allowable claim.

For all the foregoing reasons it is respectfully submitted that the claims presented are patentable. Reconsideration and allowance are requested.

This amendment is believed to be fully responsive to the Official Action.

Should there be any matters that need to be resolved in the present application; the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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